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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,729

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Takashi Watanabe

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09/05/2008

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EXAMINER

VU, DAVID

ART UNIT

PAPER NUMBER

2818

MAIL DATE

DELIVERY MODE

09/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/823,729	Applicant(s) WATANABE ET AL.	
	Examiner DAVID VU	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 12, 13, 28, 29 and 34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 12, 13, 28, 29 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/14/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-4, 12, 13, 28, 29 and 34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original disclosure does not include teaching “wherein said first polishing material is different from said second polishing material.”

Any response to this “new matter” rejection should include the location in the original disclosure where the subject matter can be found.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 12, 13, 28 and 29 are rejected under 35 U. S. C. 102(e) as being anticipated by Miyashita et al. (US Pat. 5,861,054, hereinafter Miyashita).

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Regarding claims 1-3 and 28-29, Miyashita discloses in figs. 5A-5J a semiconductor device fabrication method comprising the steps of: polishing the surface of a film-to-be-polished 12 formed over a semiconductor substrate 1 by first polishing slurry/CMP process while a first polishing material is supplied onto the polishing pad to thereby planarize the surface of the film-to-be-polished (col. 8, lines 11-20; col. 12, lines 26-32 and fig. 5H); and after the surface of the film-to-be-polished 12 has been planarized, further polishing the surface of the film-to-be-polished 12 by second polishing slurry/CMP process one more time (col. 8, lines 26-31; col. 12, lines 26-32 and fig. 5J), the polishing slurry contained in the second polishing material being the same kind as the polishing slurry of the first polishing material (i.e. comprising abrasive grains and a surfactant additive; see col. 8, lines 15-18 & 29-31) and water (col. 10, line 56 through col. 11, line 19; col. 12, lines 26-32; col. 11, lines 43-56)). Note that the CMP method is characterized by polishing a wafer surface with an abrasive cloth (pad) while supplying a polishing solution (slurry) mixed with abrasive grains. {See **Koutny, Jr et al.** (US 6,171,180) (col. 1, line 60 through col. 2, line 17 or **Hsu et al.** (US 6,677,239) (col. 1, lines 40-49; col. 10, lines 18-24 and **Wang** (US 6,046,112) (col. 6, lines 13-17))}.

Regarding claims 12 and 13, Miyashita discloses in figs. 5A-5G that before the step of planarizing the surface of the film-to-be-polished, the steps of: forming over the semiconductor substrate 1 an insulation film 2/8 having polish characteristics different from those of the film-to-be-polished 12; forming an opening in the insulation film 2/8; etching the semiconductor substrate 1 with the insulation film 2/8 as a mask to form a trench in the semiconductor substrate 1; and forming the film-to-be-polished 12 in the trench and over the insulation film 2/8, in the

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step of further polishing the surface of the film-to-be-polished 12, the surface of the film-to-be-polished 12 is polished with the insulation film 2 as a stopper (fig. 13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 4 and 34 are rejected under 35 U.S.C. 103 (a) as being unpatentable over by Miyashita (US Pat. 5,861,054).

Miyashita discloses in figs. 5A-5J a semiconductor device fabrication method comprising the steps of: polishing the surface of a film-to-be-polished 12 formed over a semiconductor substrate 1 by first polishing slurry/CMP process while a first polishing material is supplied onto the polishing pad to thereby planarize the surface of the film-to-be-polished (col. 8, lines 11-20;

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col. 12, lines 26-32 and fig. 5H); and after the surface of the film-to-be-polished 12 has been planarized, further polishing the surface of the film-to-be-polished 12 by second polishing slurry/CMP process one more time (col. 8, lines 26-31; col. 12, lines 26-32 and fig. 5J), the polishing slurry contained in the second polishing material being the same kind as the polishing slurry of the first polishing material (i.e. comprising abrasive grains and a surfactant additive; see col. 8, lines 15-18 & 29-31) and water (col. 10, line 56 through col. 11, line 19; col. 12, lines 26-32; col. 11, lines 43-56)). Note that the CMP method is characterized by polishing a wafer surface with an abrasive cloth (pad) while supplying a polishing solution (slurry) mixed with abrasive grains. {See **Koutny, Jr et al.** (US 6,171,180) (col. 1, line 60 through col. 2, line 17 or **Hsu et al.** (US 6,677,239) (col. 1, lines 40-49; col. 10, lines 18-24 and **Wang** (US 6,046,112) (col. 6, lines 13-17))}.

Miyashita fails to disclose the supply amount of the water is 2 or more times as much as a supply amount of the polishing slurry (claim 4); or the ratio of a supply amount of the second polishing material of the polishing slurry to a supply amount of the water is 1:5 (claim 34). Although the exact ratio of polishing slurry:water was not specified as recited in claims 4 and 34, it appears that the ratio as claimed is prima facie obvious due to the fact that one can vary the amount of polishing slurry and water to achieve a specific stable compound. This claim is prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See

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also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

Response to Arguments

4. Applicant's arguments with respect to claims 1-4, 12, 13, 28, 29 and 34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke H can

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be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/DAVID VU/

Primary Examiner, Art Unit 2818